

### SUPPORT FOR THE AMENDMENT

This Amendment amends the title; amends the specification; renumbers the claims; and amends the abstract. Support for the amendments is found in the specification and claims as originally filed. In particular, support for Claim 66 is found in original Claim 1 and in Claim 32. Support for new Claim 74 is found in the specification at least in Claim 66. Support for new Claims 75-91 is found in Claims 19, 21-33 and 35-37, respectively, from the Preliminary Amendment filed March 14, 2002. Support for the limitation of Claims 66 and 75 of "(Z<sup>5</sup>-Y<sup>11</sup>)<sub>n</sub>X Ig" is found in the specification at least at page 13, line 39. Support for the new Claim 75 limitation "dispersed throughout" is found in the specification at least at page 3, line 31 ("homogeneous"). No new matter would be introduced by entry of these amendments.

Upon entry of these amendments, Claims 66-91 will be pending in this application. Claims 66 and 75 are independent.

### REQUEST FOR RECONSIDERATION

Applicants respectfully request entry of the foregoing and reexamination and reconsideration of the application, as amended, in light of the remarks that follow.

Applicants thank the Examiner for the courtesies extended to their representative during the April 2, 2003, personal interview.

The present invention provides a liquid-crystalline composition comprising a liquid-crystalline mixture of at least one compound of the formula Ia having two polymerizable groups and at least one compound of the formula Ib having only one polymerizable group.

As discussed at the interview, the present invention also provides in embodiments multilayer structures each including a liquid-crystalline layer and a non-liquid crystalline

layer containing IR- or UV-absorbent or fluorescent dyes or pigments. The multilayer structures provide counterfeiting-proof markings that, in daylight, viewed from the film side, only exhibit a single color impression, which is dependent on the viewing angle. Only through the use of an IR or UV lamp and possibly appropriate viewing equipment (e.g., an IR camera), does additional identification hidden in the multilayer structure become visible. See, e.g., specification at page 47, lines 30-39 and page 48, lines 1-6.

Claims 19-37 are rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 5,798,147 ("Beck"). In addition, Claims 19-21, 23-24, 26-31 and 33-37 are rejected under 35 U.S.C. § 102(e) over U.S. Patent No. 6,217,792 ("Parri"). Claims 19-20, 22-30, 32 and 34-37 are rejected under 35 U.S.C. § 102(e) over U.S. Patent No. 6,291,065 ("Poetsch"). Claims 22, 25, 32 and 36 are rejected under 35 U.S.C. § 103(a) over Parri in view of Beck. Claims 21 and 31 are rejected under 35 U.S.C. § 103(a) over Poetsch.

Beck discloses a process for coating and printing substrates with a composition comprising a<sub>1</sub>) a chiral liquid-crystalline monomer having *two polymerizable groups* and b) a polymeric binder and/or monomeric compounds which can be converted into the polymeric binder by polymerization. Alternatively, Beck's composition comprises a<sub>2</sub>) an achiral liquid-crystalline monomer having *two polymerizable groups*, b) a polymeric binder and/or monomeric compounds which can be converted into the polymeric binder by polymerization, and c) a non-liquid-crystalline chiral compound. See, e.g., Beck at column 29, lines 34-53. Beck discloses layer-by-layer application of a plurality of coats of Beck's liquid-crystalline composition. Beck at column 17, lines 50-52.

However, Beck fails to disclose, teach or suggest the liquid-crystalline composition of independent Claim 75 comprising a liquid-crystalline mixture comprising at least one compound of the formula Ia having two polymerizable groups and at least one compound of the formula Ib having *only one polymerizable group*.

Parri discloses liquid-crystalline materials comprising chiral dopants of the formula  $R^1-X^1-MG^1-G-MG^2-X^2-R^2$ , where  $R^1$  and  $R^2$  are straight-chain or branched alkyl radicals with up to 25 C atoms that can be unsubstituted, mono- or polysubstituted by halogen or CN. Parri at Abstract; column 3, lines 15-18; column 22, lines 2-6. Parri discloses coating the liquid-crystalline materials onto a substrate. Parri at column 13, lines 36-28.

However, Parri fails to disclose, teach or suggest the independent Claim 75 limitation of at least one chiral compound in which "the variables  $Z^5$  and  $Z^{11}$  are *polymerizable* groups".

Poetsch discloses pigment flakes produced by coating a chiral liquid-crystalline material containing a dye onto a substrate, removing the substrate, and grinding the liquid-crystalline material into small particles. Poetsch at Abstract; 4, lines 25-40.

However, because Poetsch discloses liquid-crystalline flakes, Poetsch fails to suggest the independent Claim 75 limitation that "additives B), C), D) and E) are *dispersed throughout* the liquid-crystalline mixture A)".

Furthermore, Beck, Parri and Poetsch fail to suggest the independent Claim 66 features of applying, on a substrate, the recited liquid-crystalline composition (step i)) and at least one further non-liquid-crystalline composition containing an IR- or UV-absorbent or fluorescent dye or pigment (step ii)).

Thus, the various rejections over Beck, Parri and Poetsch should be withdrawn.

The specification is objected to for various reasons. To obviate the objection, the Title and specification amended. In addition, as requested by the Examiner at the April 2, 2003, personal interview, the Abstract filed with the original application as pages 62-63 is amended to contain fewer than 150 words.

Claim 19 is objected to because assertedly "it is unclear how  $Z^1$ - $Z^4$  are polymerizable groups,  $Y^1$ - $Y^8$  are as specified, however  $Z^1$ - $Y^1$ ,  $Z^2$ - $Y^2$ ,  $Z^3$ - $Y^5$  and (if present)  $Z^4$ - $Y^6$  can then be either methacryloyloxy, acryloyloxy, or vinyloxy". Applicants respectfully traverse this objection. As indicated in the specification at page 5, lines 29 and 45, with a vinyloxy group (i.e.,  $H_2C=CH-Y$ , where  $Y$  is oxygen, so  $Z$  is  $H_2C=CH-$ ) and with a methacryloyloxy group (i.e.,  $H_2C=C(CH_3)-Y$ , where  $Y$  is  $-CO-O-$ , so  $Z$  is  $H_2C=C(CH_3)-$ ), groups  $Z^1$  to  $Z^4$  contain double bonds and thus are polymerizable.

To obviate the rejection as it applies to the recitation " $Y^1$  to  $Y^8$ ", these groupings are explicitly defined in independent Claim 66 as "bridging units".

Claims 19-37 are rejected under 35 U.S.C. § 112, second paragraph, because Claim 20 does not further limit the claim from which it depends. Claim 20 is canceled so the rejection is moot and should be withdrawn.

The Office Action objects to the specification and rejects Claims 19-37 under 35 U.S.C. § 112, first paragraph, for lack of enablement because assertedly Applicants never define what is encompassed by the limitation "*light, heat and/or oxidation stabilizers*" and only provide examples of what might be considered. To obviate the objection and rejection as it applies to independent Claims 66 and 75, the term "*light, heat and/or oxidation stabilizers*" is amended to "*light, heat and/or oxidation stabilizers that stabilize the liquid-crystalline composition against light, heat and/or oxidation.*"

As discussed in MPEP § 2173.02:

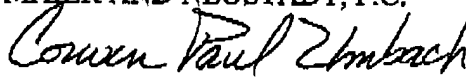
[S]ome latitude in the manner of expression and the aptness of terms should be permitted even though the claim language is not as precise as the Examiner might desire.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is in condition for allowance. Applicants respectfully request favorable consideration and prompt allowance of the application.

Should the Examiner believe that anything further is necessary in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER AND NEUSTADT, P.C.



Norman F. Oblon  
Registration No. 24,618  
Attorney of Record

Corwin P. Umbach, Ph.D.  
Registration No. 40,211

Attachment:  
Abstract



**22850**

(703) 413-3000  
(703) 413-2220 (fax)

NFO:CPU/bwt  
I:\atty\Cpu\Apr03\211586US-supplam.wpd